ABSTRACT

Chemical (typically kraft) pulp having enhanced intrinsic fiber strength and bleachability compared to pulp produced using conventional or modified kraft cooking is produced by using high alkali and/or pH cooking. preferably by adding the vast majority of cooking liquor (such as kraft white liquor) after the first removal of liquid from the digester so that the effective alkali concentration is high near the end of the cook. That is during at least the last minute (preferably at least the last 15 minutes and most preferably at least the last 30 minutes) before the cook is terminated the effective alkali concentration is between 15–50 g/l. more preferably between about 18–40 g/l. and most preferably between about 20–35 g/l. More than 50% (in fact most preferably more than 90%) of the total alkali added to the slurry in order to produce the chemical pulp is added after the first removal of liquid from the digester. and the alkali is added at two or more different locations so that the highest effective alkali concentration is within the range set forth above. The extracted liquors having a high effective alkali concentration are reused in the earlier stages of the cooking to avoid an increase in the addition and consumption of fresh alkali. Also a hydraulic or vapor phase continuous digester is provided with a quench circulation and alkali and heat are added to the quench circulation to control the final kappa number of the pulp. and so that the effective alkali concentration just before termination of the cooking zone is within the above ranges.